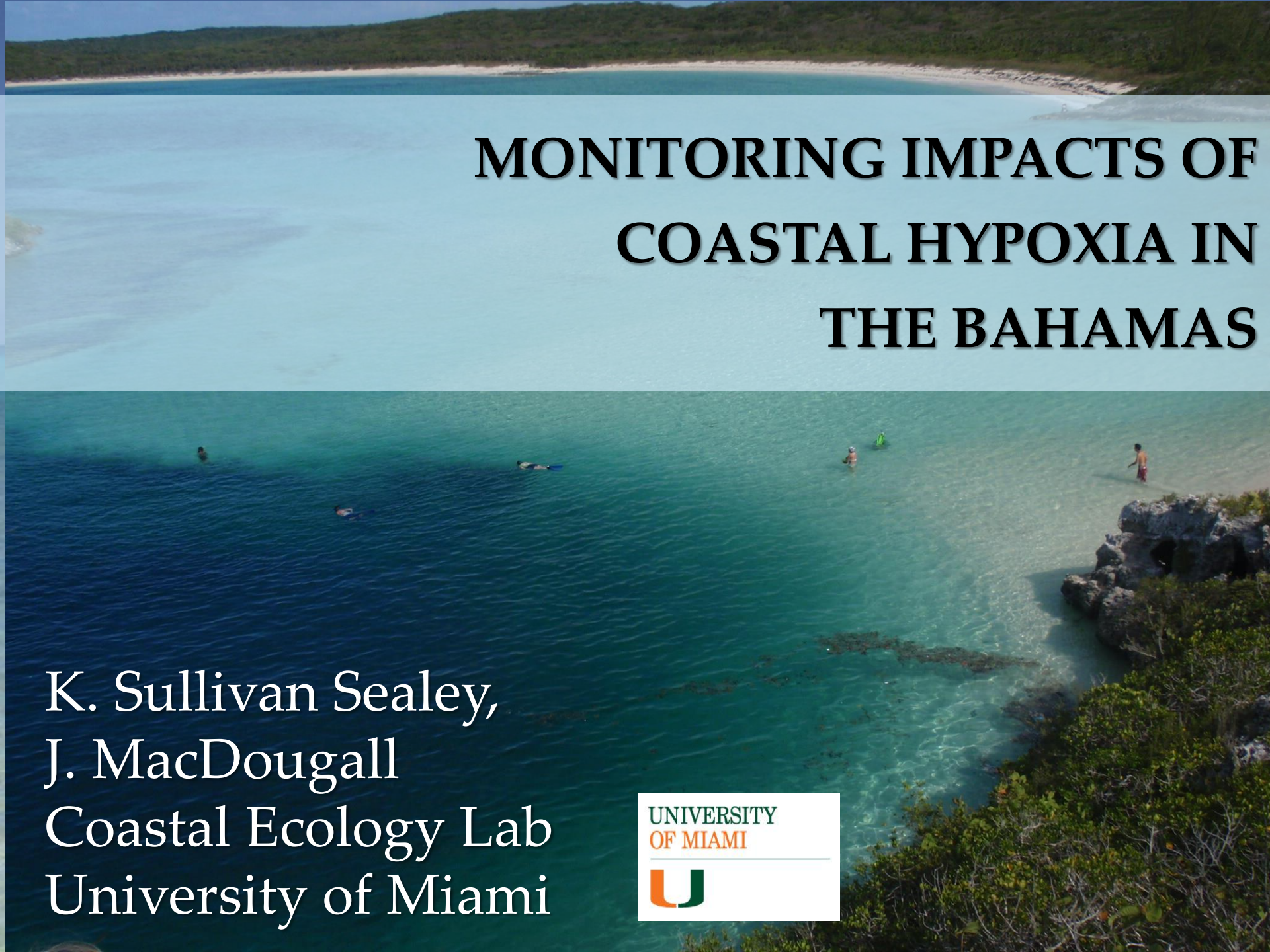
MONITORING IMPACTS OF COASTAL HYPOXIA IN THE BAHAMAS



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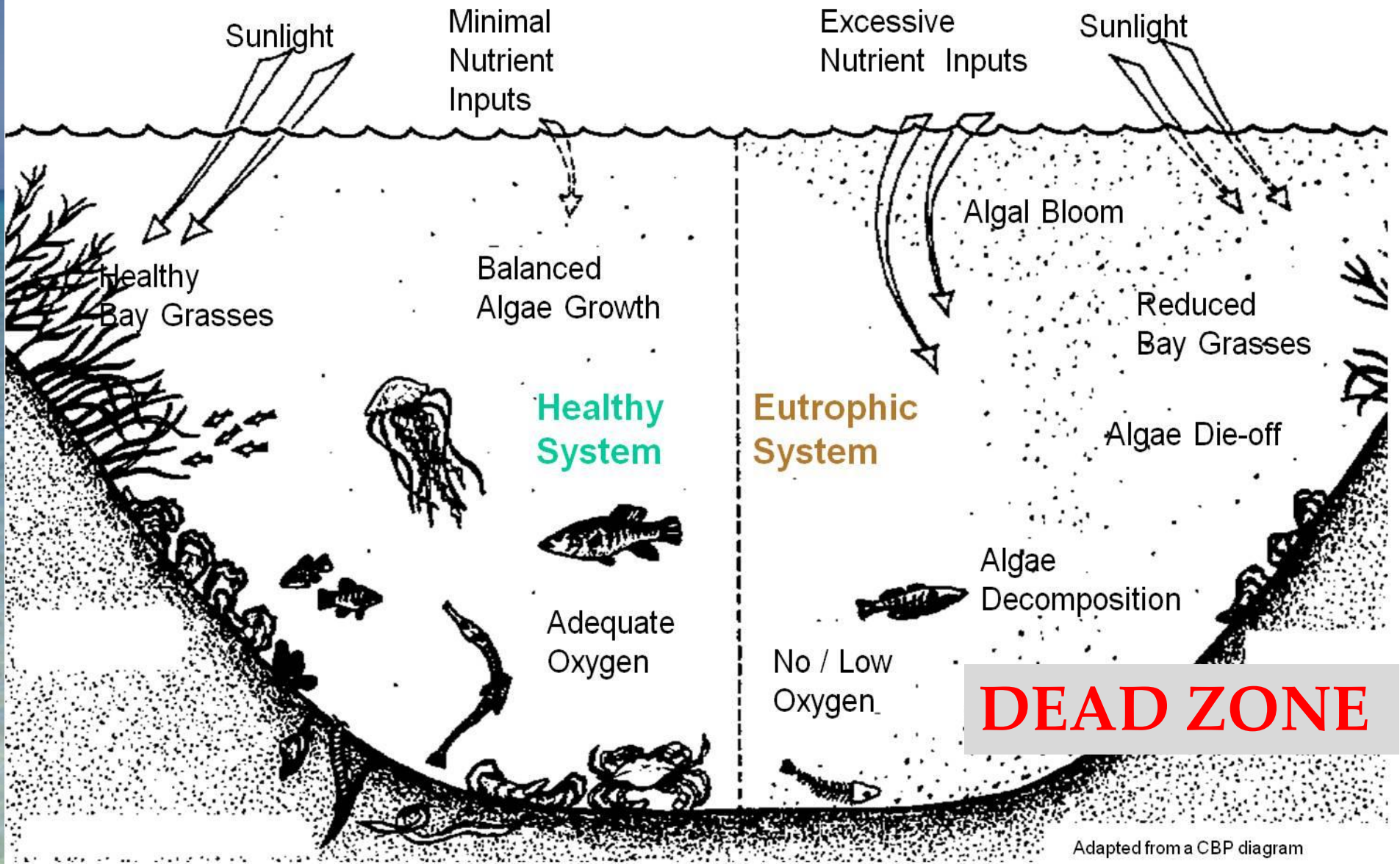
What is Eutrophication and Hypoxia?

Eutrophication (noun) is defined as "increase in the rate of supply of organic matter to an ecosystem" (Nixon 1995).

Hypoxia (noun) is reduced dissolved oxygen content of a body of water detrimental to aerobic organisms. Hypoxic conditions resulting from eutrophication kill fish and other marine life…

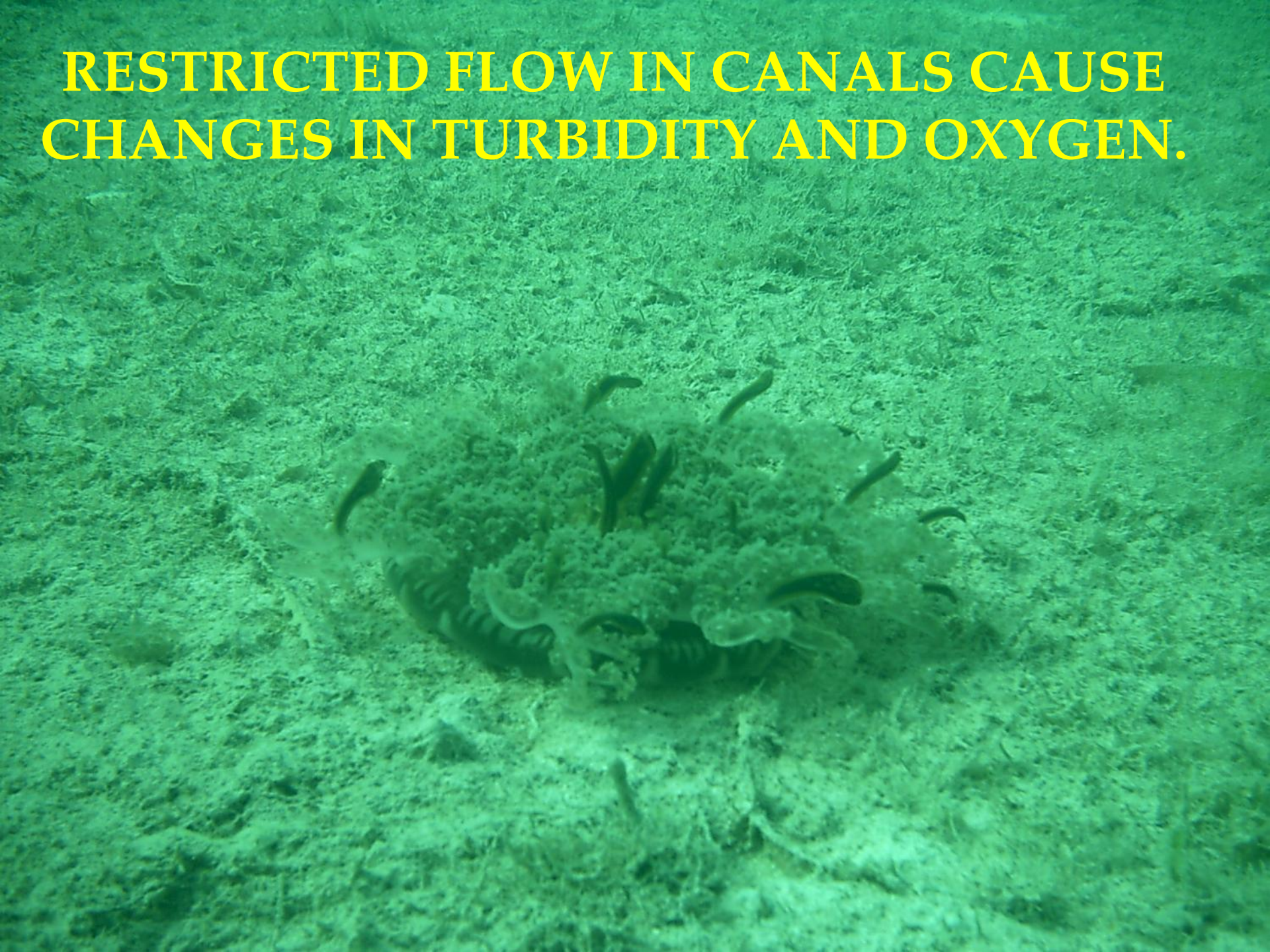
The Big Picture

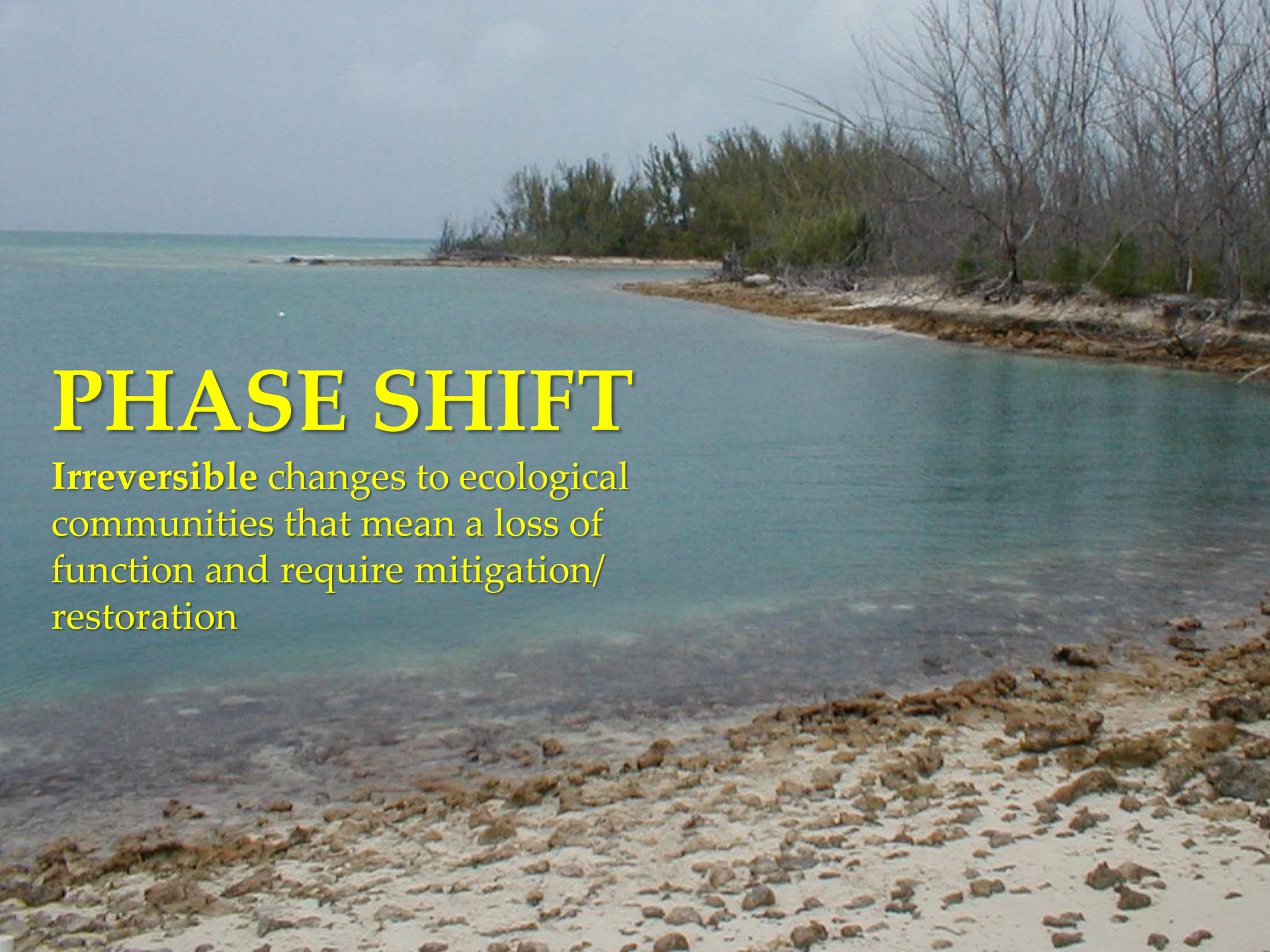


Adapted from a CBP diagram

OLIGOTROPHY = "FEW FEEDING"

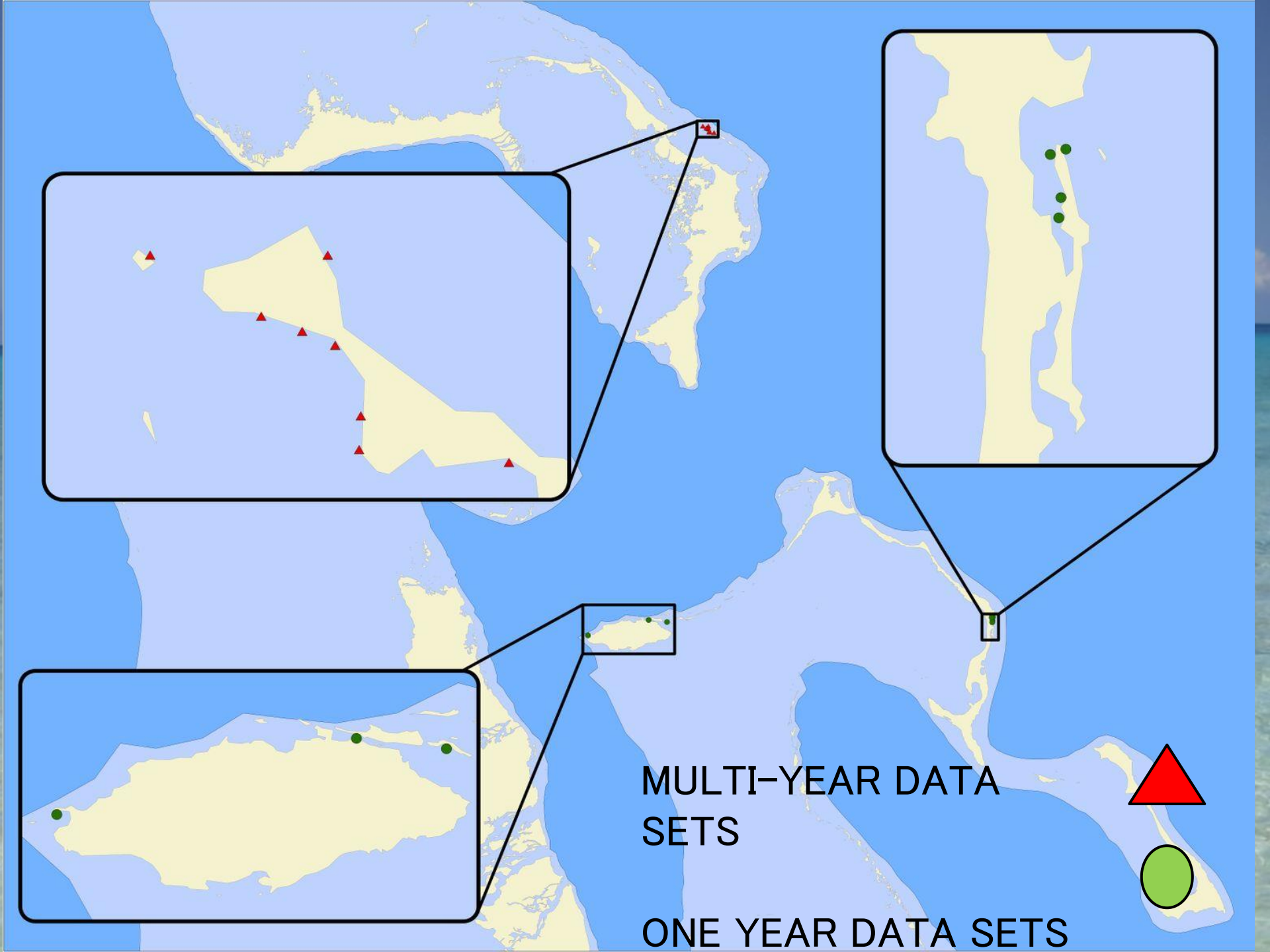
- LOW NUTRIENTS
- CLEAR WATER
- HIGH SOLAR IRRADIATION
- SEASONAL AND VARIABLE RAINFALL
- PRIMARY PRODUCTION LINKED TO THE SEA FLOOR IN SEAGRASSES AND ALGAE

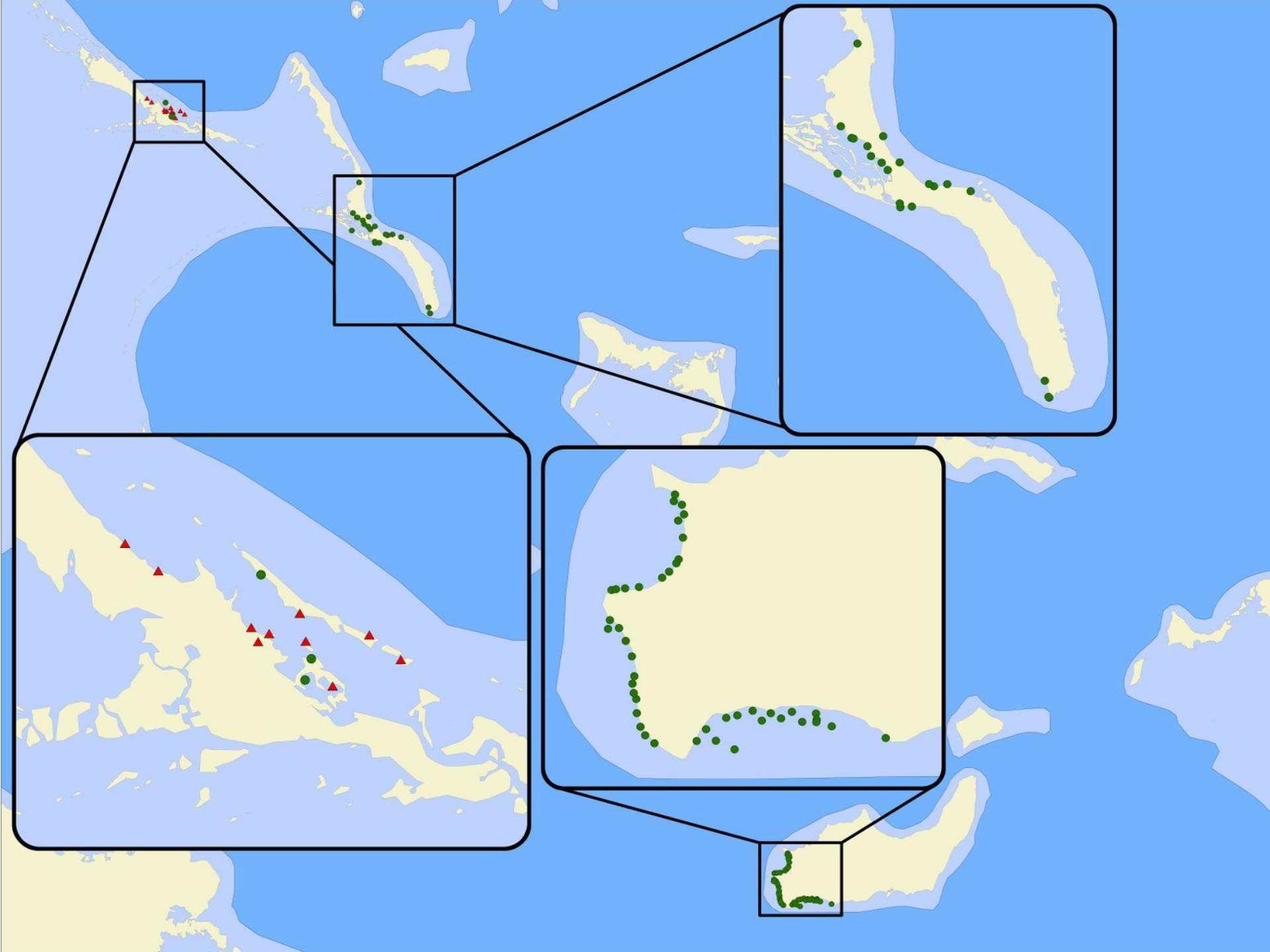

RESTRICTED FLOW IN CANALS CAUSE
CHANGES IN TURBIDITY AND OXYGEN.



PHASE SHIFT

Irreversible changes to ecological communities that mean a loss of function and require mitigation/ restoration

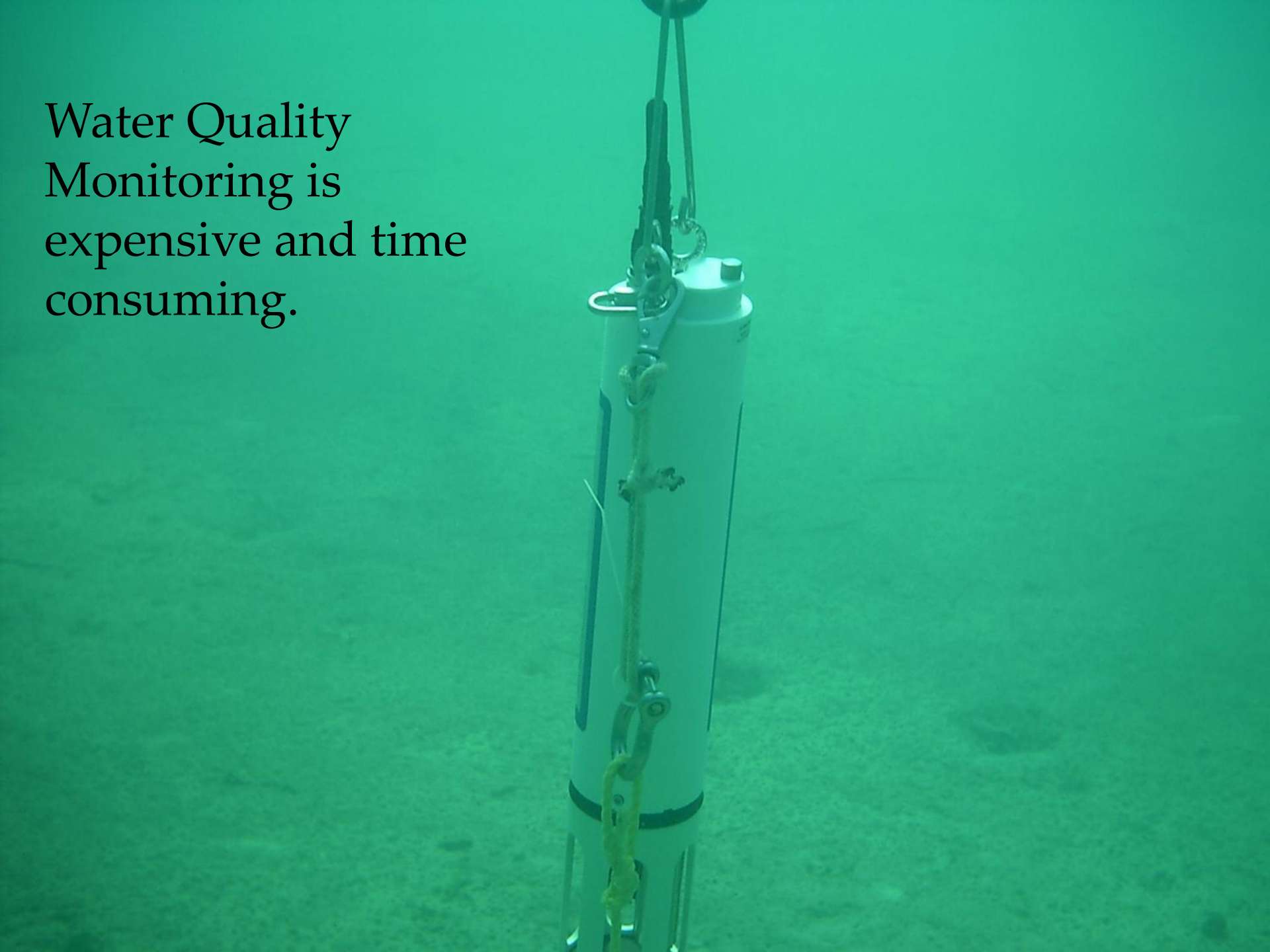

MULTI-YEAR DATA SETS
ONE YEAR DATA SETS



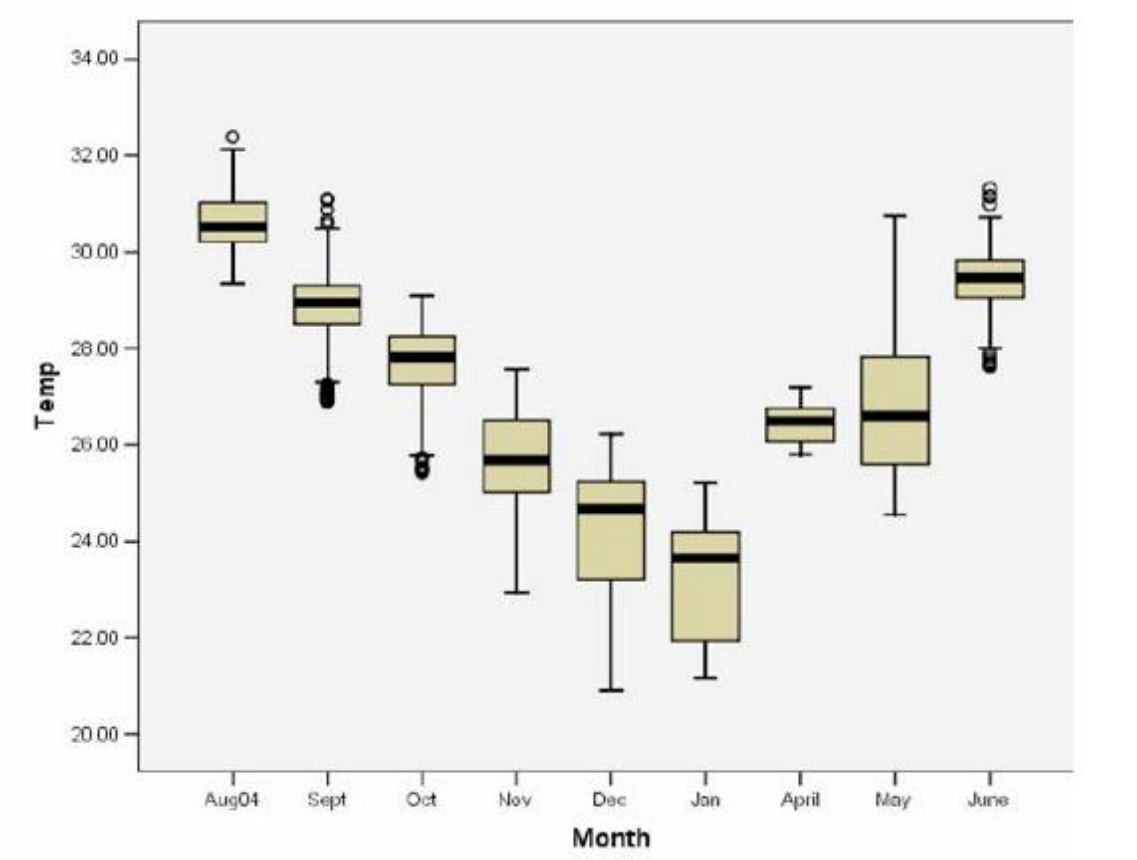
Water quality monitoring

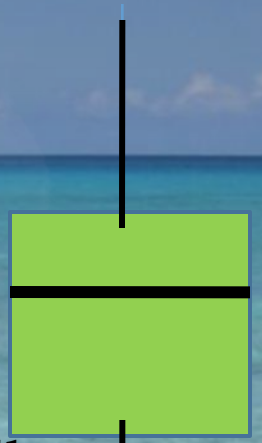
- Minimum of two weeks
- Sunrise. Sunset
- Wet and Dry seasons
- Multi-year study sites

Water Quality Monitoring is expensive and time consuming.



BOX PLOTS USED TO REPRESENT PATTERNS OF VARIABILITY IN WATER QUALITY PARAMETERS





MEDIAN

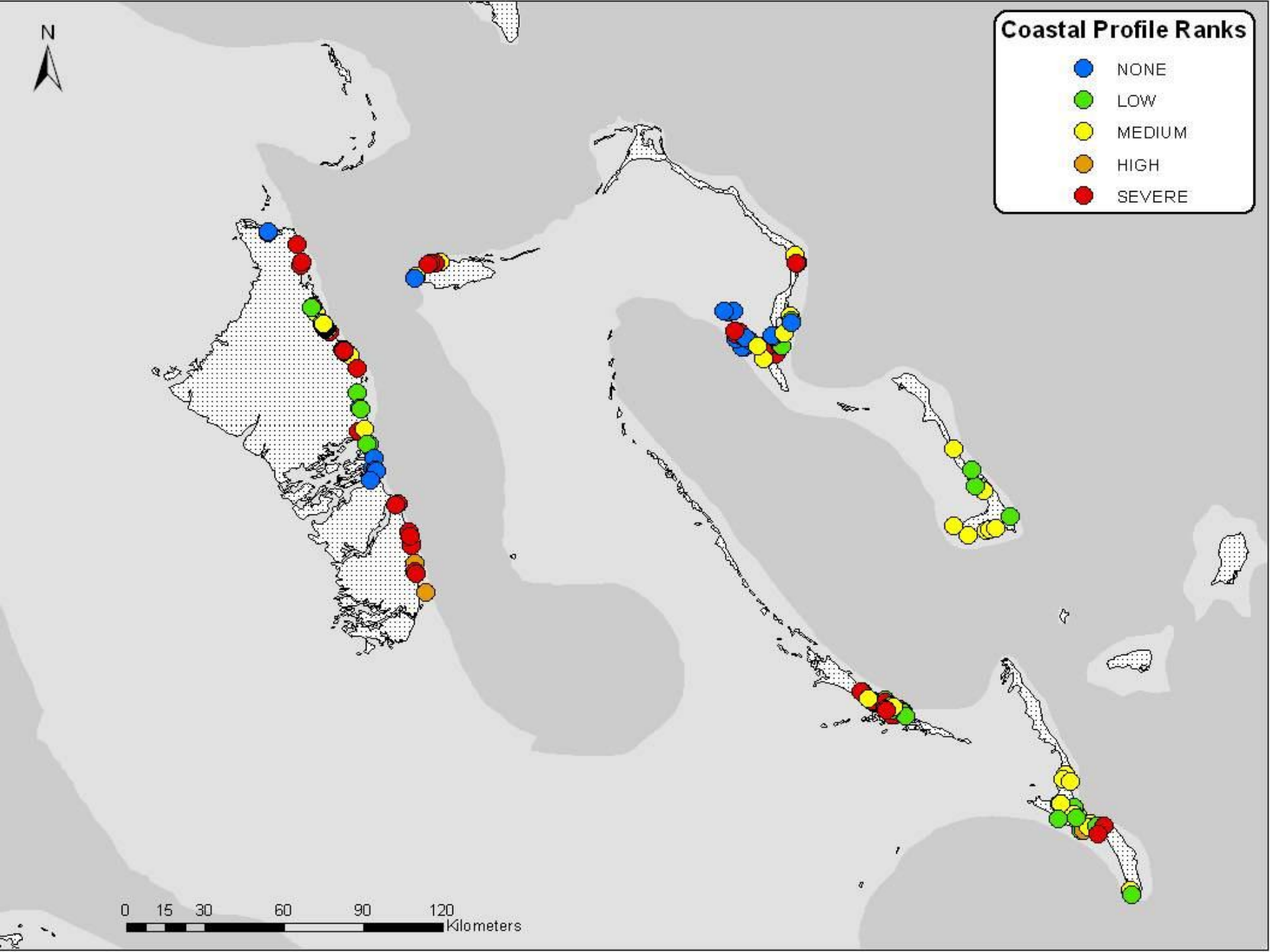
50% of all values

MAX and MIN values minus outliers (3SD)

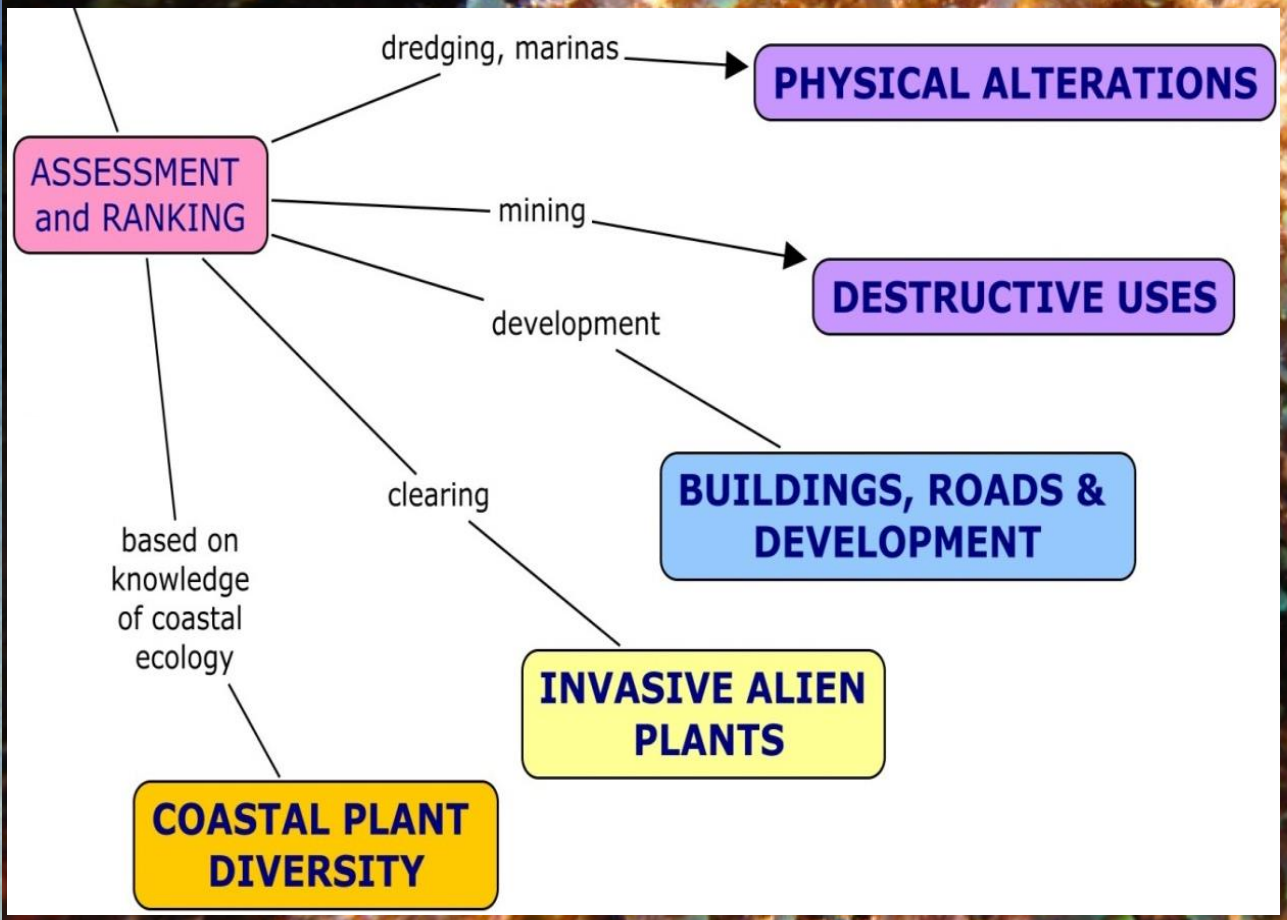

COASTAL PLANT COMMUNITIES AND WILDLIFE HABITAT
NEAR SHORE SEAGRASS, HARD BOTTOM AND PATCH REEF HABITATS

PHYSICAL ALTERATION OF THE SHORELINE	DESTRUCTIVE USE OF THE COASTAL ZONE	BUILDINGS AND DEVELOPMENT	INVASIVE ALIEN SPECIES IN COASTAL ZONE
Dredging	Sand mining	Resorts and Homes	Australian pine
Ports and Marinas	Dumping	Roads	Hawaiian beach cabbage

RANKING RISK OF EUTROPHICATION


N
Coastal Profile Ranks
NONE
LOW
MEDIUM
HIGH
SEVERE
0 15 30 60 90 120
Kilometers

WHAT IS THE HYPOXIA RISK?




GLOBALLY, EUTROPHICATION IS THE GREATEST THREAT TO COASTAL ECOSYSTEM.